

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims

1. (Original) A method in a communications network of testing a communications link between a first end node and a second end node, said end nodes communicating mutually via an intermediate node, wherein the first end node is connected to the intermediate node via a first transmission medium and the second end node is connected to the intermediate node via a second, different transmission medium, said method comprising the steps of:

executing a first loop-back test between the intermediate node and the first end node according to a standard of the first transmission medium; and

executing a second loop-back test between the intermediate node and the second end node according to a standard of the second transmission medium.

2. (Original) The method of testing a communications link of claim 1, wherein the intermediate node is an Internet Protocol Digital Subscriber Line Access Multiplexer (IPDSLAM) and the first transmission medium is Asynchronous Transfer Mode (ATM), and the step of executing a first loop-back test includes initiating the first loop-back test in the IPDSLAM by sending an ATM test signal on a virtual channel from the IPDSLAM to the first end node.

3. (Original) The method of testing a communications link of claim 2, wherein the first end node is a Customer Premises Equipment (CPE), and the step of initiating the first loop-back test in the IPDSLAM by sending an ATM test signal includes sending an F5 operations and maintenance loop-back test signal from the IPDSLAM to the CPE.

4. (Original) The method of testing a communications link of claim 3, wherein the step of executing a first loop-back test also includes receiving the F5 operations and maintenance loop-back test signal in the IPDSLAM when looped back by the CPE.

5. (Original) The method of testing a communications link of claim 1, wherein the intermediate node is an Internet Protocol Digital Subscriber Line Access Multiplexer (IPDSLAM) and the second transmission medium is Ethernet, and the step of executing a second loop-back test includes initiating the second loop-back test in the IPDSLAM by sending a Point-to-Point Protocol over Ethernet (PPPoE) test signal from the IPDSLAM to the second end node.

6. (Original) The method of testing a communications link of claim 5, wherein the second end node is a Broadband Remote Access Server (BBRAS), and the step of initiating the second loop-back test in the IPDSLAM includes broadcasting a PPPoE Active Discovery Initiation (PADI) packet from the IPDSLAM toward an Ethernet network in which the BBRAS is located.

7. (Original) The method of testing a communications link of claim 6, wherein the step of executing a second loop-back test also includes receiving in the IPDSLAM, a PPPoE Active Discovery Offer (PADO) response packet sent by the BBRAS, said PADO including the name of the BBRAS and services that the BBRAS provides.

8. (Original) The method of testing a communications link of claim 1, further comprising reporting the results of the first and second loop-back tests from the intermediate node to a network management node.

9. (Original) The method of testing a communications link of claim 1, further comprising the steps of:

receiving in a Customer Care Center (CCC), a customer complaint regarding the communications link between the first and second end nodes;

instructing the intermediate node to perform the steps of claim 1 in response to the customer complaint; and

reporting the results of the first and second loop-back tests from the intermediate node to the CCC.

10. (Original) The method of claim 9, wherein the customer complaint is received on a per-service basis from one of a plurality of service providers.

11. (Original) A method in a communications network of testing a communications link between a Customer Premises Equipment (CPE) and a Broadband Remote Access Server (BBRAS), said CPE and BBRAS communicating mutually via an intermediate Internet Protocol Digital Subscriber Line Access Multiplexer (IPDSLAM), wherein the CPE is connected to the IPDSLAM via an Asynchronous Transfer Mode (ATM) link, and the BBRAS is connected to the IPDSLAM via an Ethernet link, said method comprising the steps of:

executing a first loop-back test between the IPDSLAM and the CPE, said first loop-back test including:

sending an F5 operations and maintenance loop-back test signal from the IPDSLAM to the CPE;

receiving the F5 operations and maintenance loop-back test signal by the CPE; and

sending the F5 operations and maintenance loop-back test signal from the CPE to the IPDSLAM; and

executing a second loop-back test between the IPDSLAM and the BBRAS, said second loop-back test including:

sending a PPPoE Active Discovery Initiation (PADI) packet from the IPDSLAM to the BBRAS;

receiving the PADI packet by the BBRAS; and

sending a response from the BBRAS to the IPDSLAM with the name of the BBRAS and services that the BBRAS provides.

12. (Original) The method of testing a communications link of claim 11, further comprising reporting the results of the first and second loop-back tests from the intermediate node to a network management node.

13. (Original) A system in a communications network for testing a communications link between a first end node and a second end node, said end nodes communicating mutually via an intermediate node, wherein the first end node is connected to the intermediate node via a first transmission medium and the second end node is connected to the intermediate node via a second, different transmission medium, said system comprising:

means in the intermediate node for sending a first loop-back test message from the intermediate node to the first end node according to a standard of the first transmission medium;

means in the first end node for sending a response to the intermediate node upon successfully receiving the first loop-back test message;

means in the intermediate node for sending a second loop-back test message from the intermediate node to the second end node according to a standard of the second transmission medium; and

means in the second end node for sending a response to the intermediate node upon successfully receiving the second loop-back test message.

14. (Original) The system of claim 13, wherein the first end node is a Customer Premises Equipment (CPE), the second end node is a Broadband Remote Access Server (BBRAS), and the intermediate node is an Internet Protocol Digital Subscriber Line Access Multiplexer (IPDSLAM).

15. (Original) The system of claim 14, wherein the first transmission medium is Asynchronous Transfer Mode (ATM), and the second transmission medium is Ethernet.

16. (Original) The system of claim 13, further comprising a network management node in communication with the intermediate node, said network management node instructing the intermediate node to test the communication link between the first and second end nodes, and said intermediate node reporting to the network management node, the results of the first and second loop-back test messages.

17. (Original) The system of claim 16, wherein the network management node is a Customer Care Center.

18. (Original) An intermediate node that connects a first end node and a second end node in a communications network, said intermediate node comprising:

first communication means for communicating with the first end node via a first transmission medium, said first communication means including:

means for sending a first loop-back test message from the intermediate node to the first end node according to a standard of the first transmission medium; and

means for receiving a response to the first loop-back test message from the first end node;

second communication means for communicating with the second end node via a second transmission medium different from the first transmission medium, said second communication means including:

means for sending a second loop-back test message from the intermediate node to the second end node according to a standard of the second transmission medium; and

means for receiving a response to the second loop-back test message from the second end node.

19. (Original) The intermediate node of claim 18, wherein the intermediate node is an Internet Protocol Digital Subscriber Line Access Multiplexer (IPDSLAM), the first transmission medium is Asynchronous Transfer Mode (ATM), and the second transmission medium is Ethernet.

20. (Original) The intermediate node of claim 19, wherein the first communication means communicates using ATM with a first end node comprising a Customer Premises Equipment (CPE), and the second communication means communicates using Ethernet with a second end node comprising a Broadband Remote Access Server (BBRAS).

21. (Original) The intermediate node of claim 18, further comprising third communication means for communicating with a network management node, said third communication means including:

means for receiving instructions from the network management node to test the communication link between the first and second end nodes; and

means for reporting to the network management node, the results of the first and second loop-back test messages.